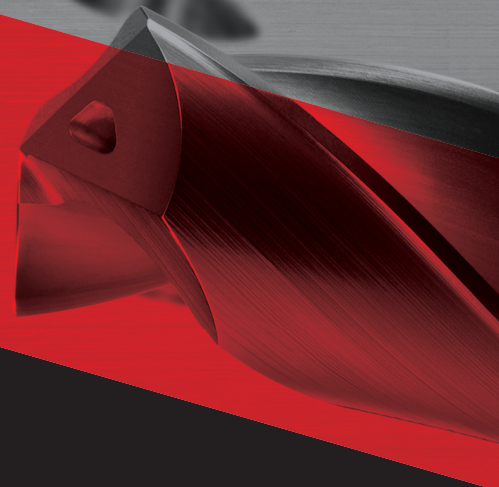
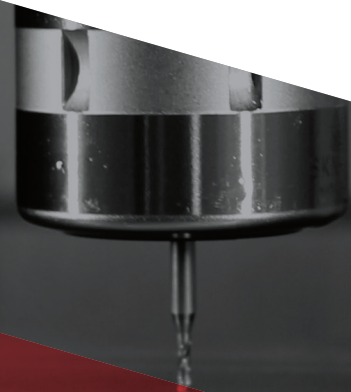


MVE/MVS

**NEW GENERATION SOLID
CARBIDE DRILLS EMPLOYS NEW
TRI-COOLING TECHNOLOGY®**

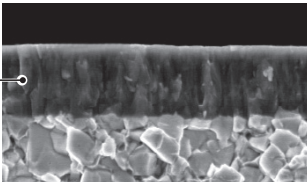


Solid Carbide Drills
WSTAR Drill Series

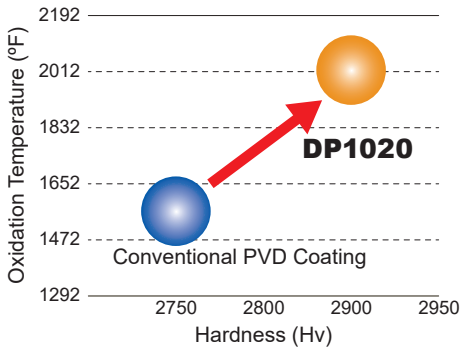
MVE/MVS

Coated Grade DP1020

Newly-developed coating for drills provides excellent wear resistance with low friction property, resulting in excellent versatility and extended tool life.



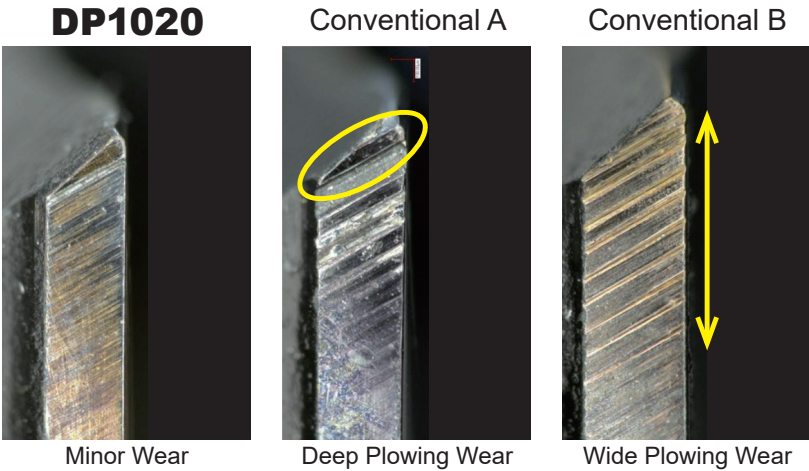
Multi-layer Accumulated
Al-Ti-Cr-N Based PVD Coating



Excellent Margin Wear

DP1020 has excellent margin wear resistance which minimizes drill length reduction from re-grinding.

Margin Wear after 187 feet Machining

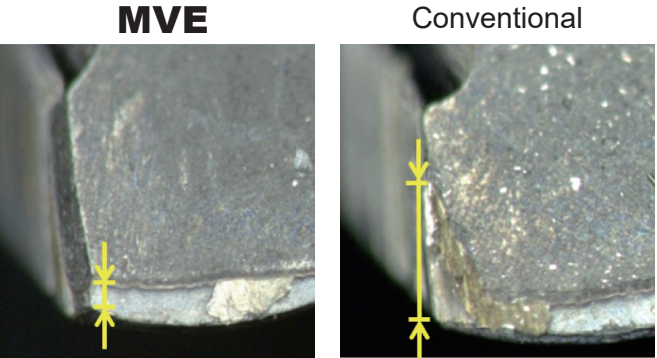


<Cutting Conditions>
Work Material : AISI 1050
Cutting Speed : 330 SFM
Feed Rate : .008 IPR
Cutting Mode : Water Based (External Coolant)

New Wavy Cutting Edge

The unique curved cutting edge combines edge sharpness with rigidity. This combination controls the progression of wear at the cutting edge periphery.

**Comparison of Wear at the Cutting Edge Periphery
(After 187 feet Machining)**



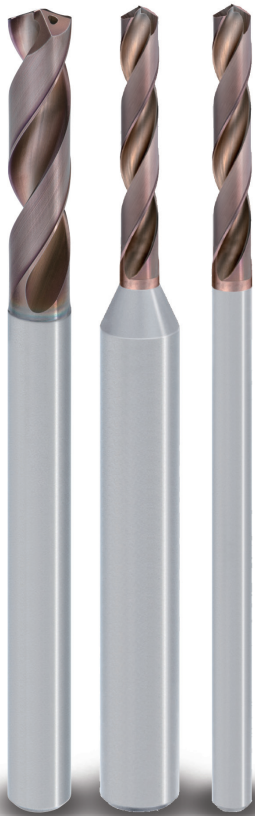
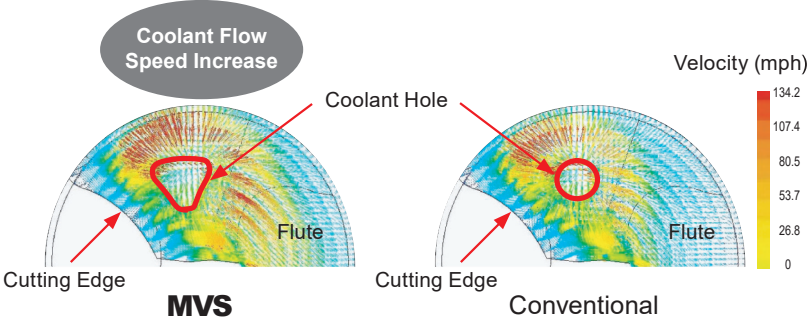
<Cutting Conditions>
Work Material : AISI 1050
Cutting Speed : 330 SFM
Feed Rate : .008 IPR
Cutting Mode : Water Based (External Coolant)

ZERO-μ Surface

Our unique smooth surface technology reduces cutting resistance and offers excellent chip evacuation.

TRI-cooling Technology®

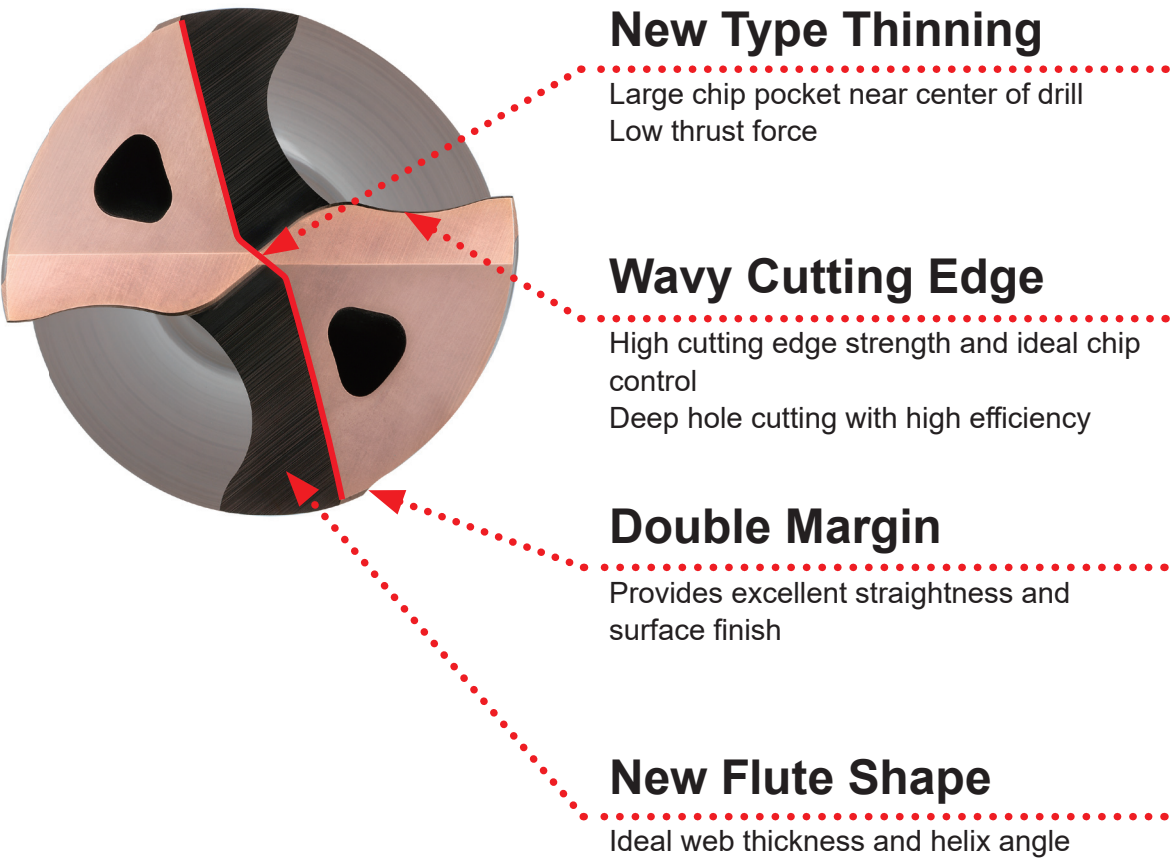
Longer tool life is achieved with unique coolant hole geometry which improves coolant flow rate and reduces the heat generated in the hole (available in sizes over : ø.236 inch or ø 6 mm).



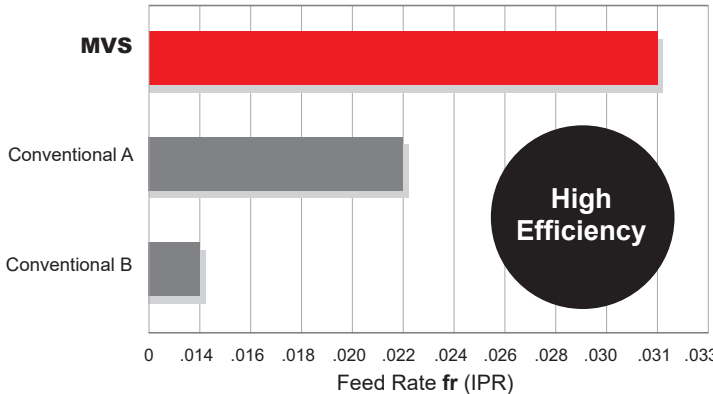
Solid Carbide Drills
WSTAR Drill Series

MVS Long Type

Available in DCx10, DCx15, DCx20, DCx25, DCx30, DCx35, DCx40



MVS Long Type Provides High Feed
Feed Limit Test

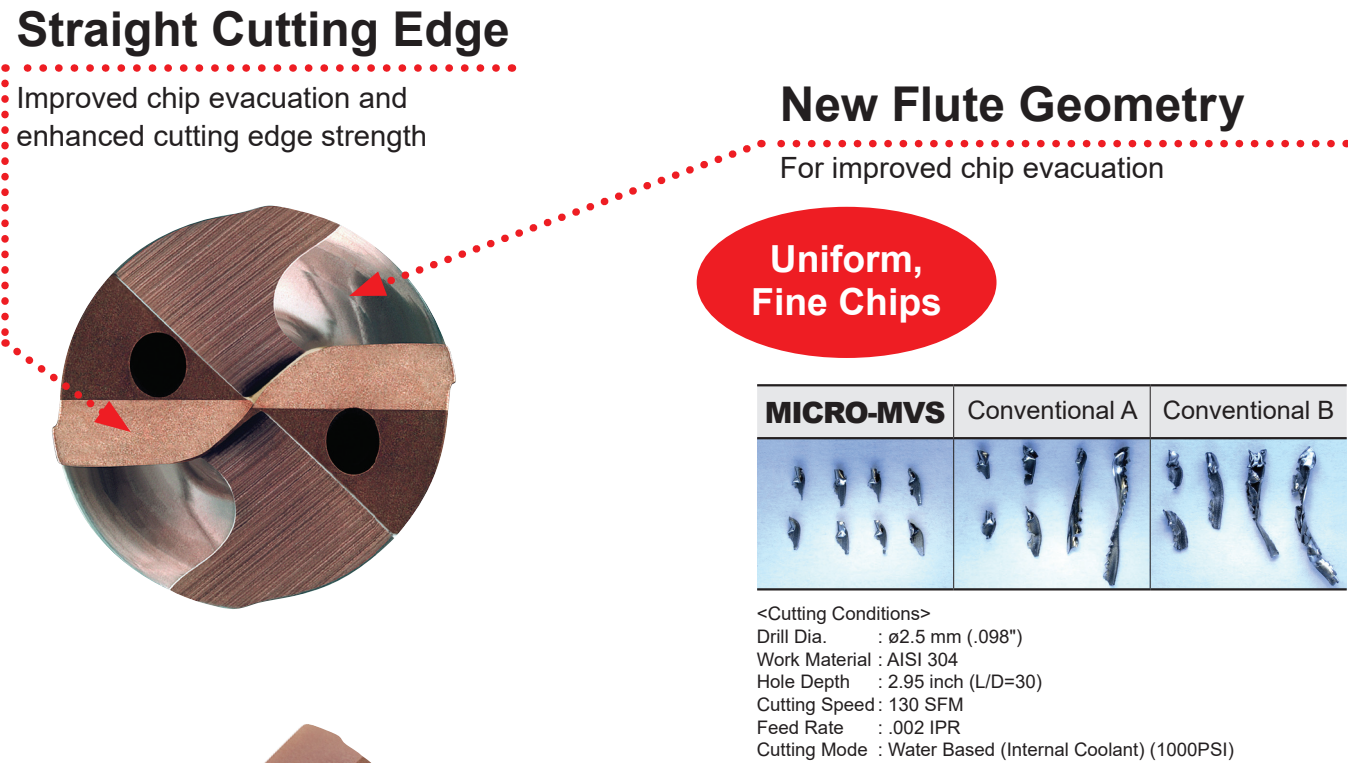


<Cutting Conditions>
Drill Dia. : ø5 mm (.197")
Work Material : AISI 1050
Hole Depth : 5.906 inch (L/D = 30)
Cutting Speed : 260 SFM
Cutting Mode : Water Based (Internal Coolant)

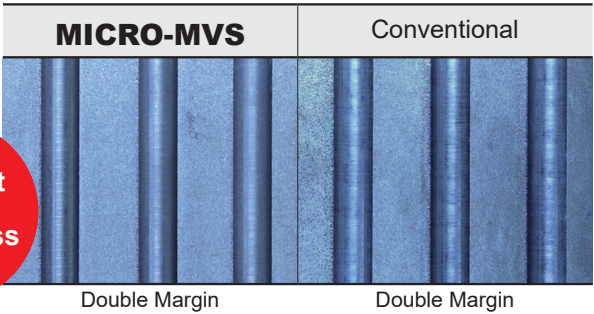
Solid Carbide Drills
WSTAR Drill Series

MICRO-MVS

Diameters from ø.0394"—ø.1142"
Available in DCx2, DCx7, DCx12, DCx20, DCx25 & DCx30
Ideal for long tool life and deep hole drilling.



Double Margin
Provides excellent straightness and high precision cutting.



<Cutting Conditions>
Drill Dia. : ø2 mm (.079")
Work Material : AISI 4140
Hole Depth : 2.36 inch (L/D=30)
Cutting Speed : 100 SFM
Feed Rate : .002 IPR
Cutting Mode : Water Based (Internal Coolant) (1000 PSI)

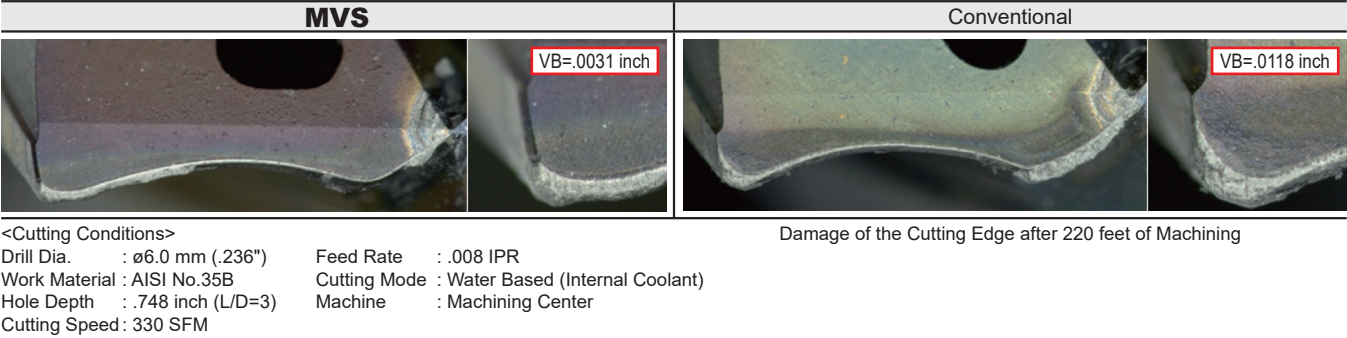
Solid Carbide Drills

Cutting Performance

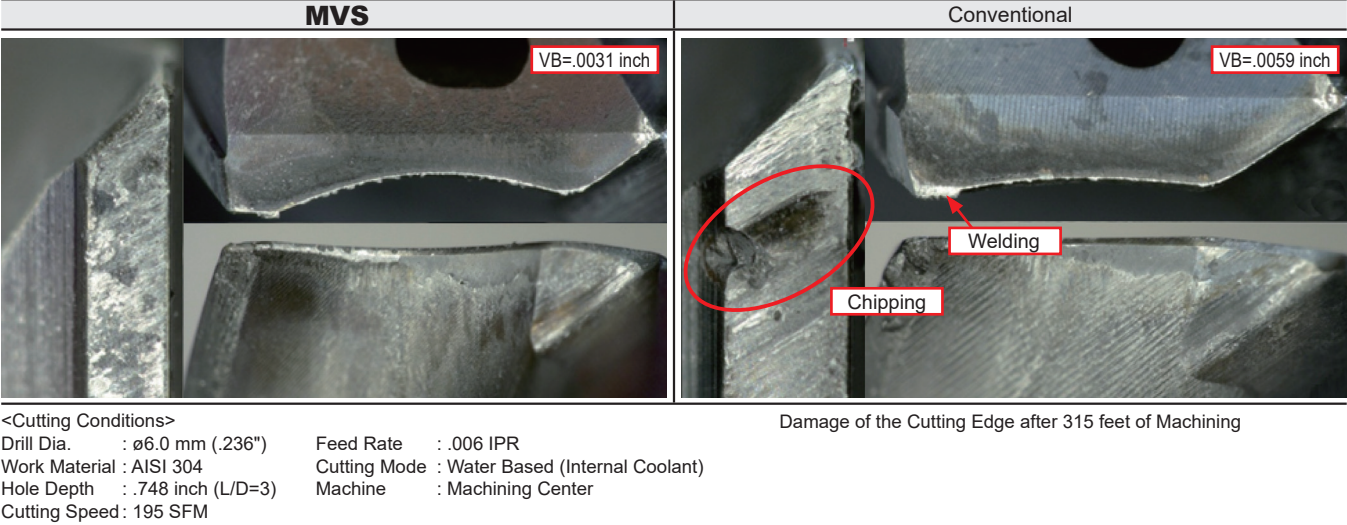
Cutting of Alloy Steel



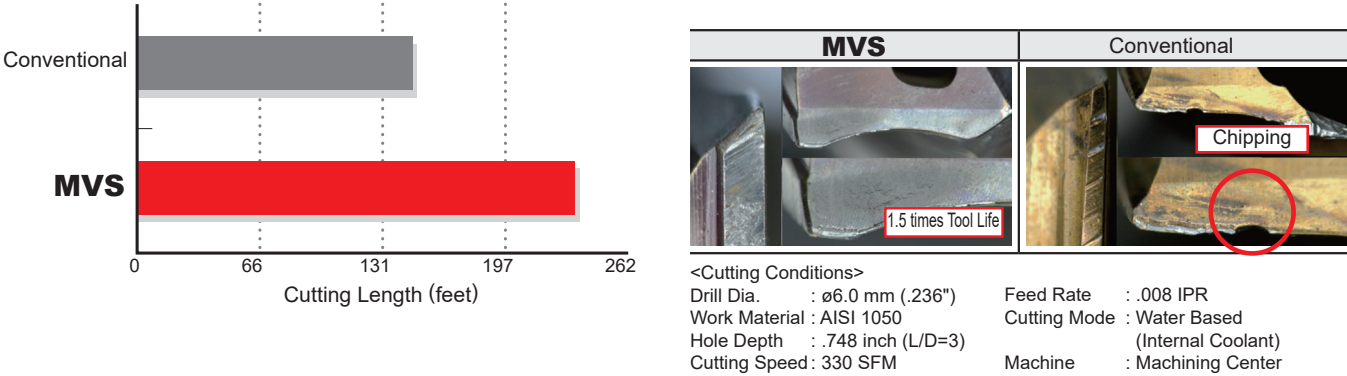
Cutting of Cast Iron



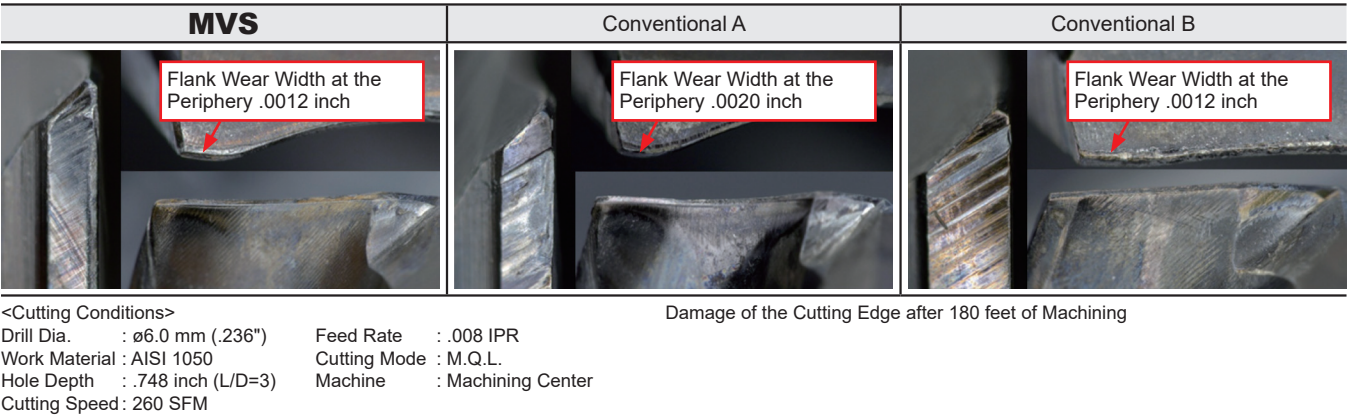
Cutting of Stainless Steel



Cutting of Carbon Steel



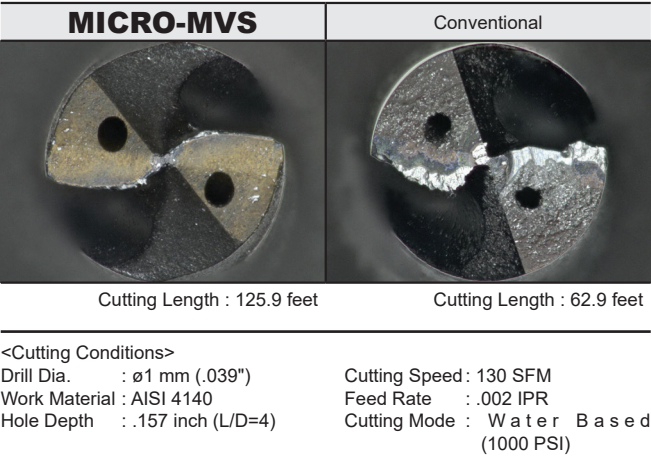
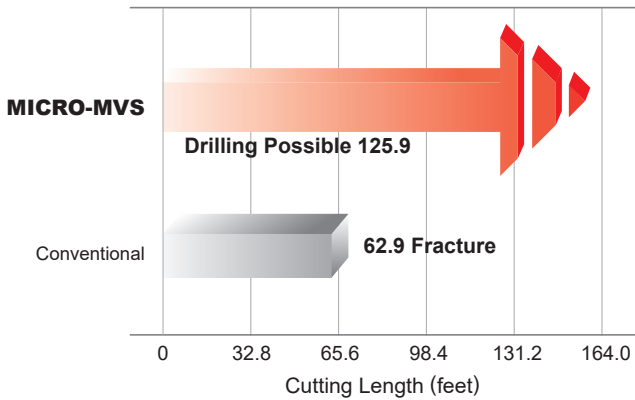
Cutting of M.Q.L.



Cutting Performance

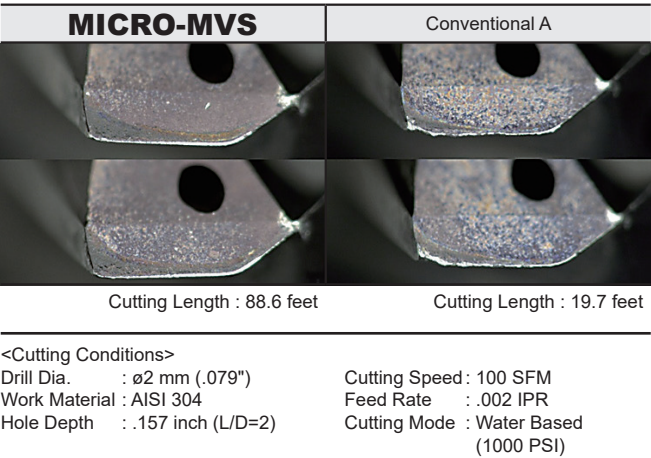
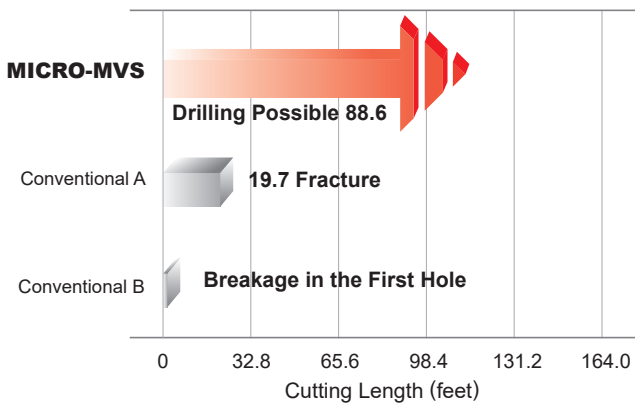
Alloy Steel

MVS gives a stable performance and double tool life.



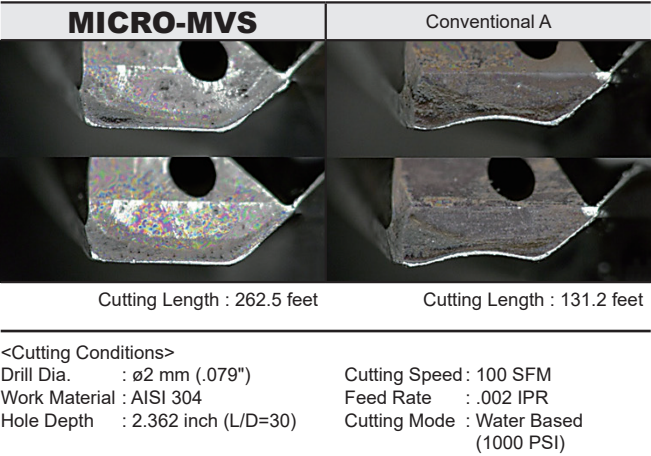
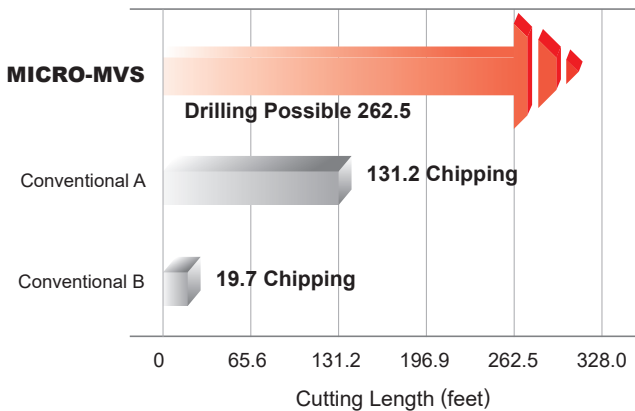
Stainless Steel

MVS provides stability and long tool life even when drilling stainless steel.



Stainless Steel (L/D=30)

MVS provides stability and long tool life even when drilling deep holes in stainless steel.



WSTAR Drill Series

MVE / MVS are applicable in a wide range of materials.
Drills for specific materials are also available.

		P Carbon Steel	M Stainless Steel	K Cast Iron	N Light Alloy	S Heat-resistant Alloy	H Hardened Steel
MVE/MVS		+++	+++	+++	+	+	+ Only MVE
MMS			++++				
MNS					++++		
MHS		+	+			+	++++
MWE/MWS		++	++	++	+	+	

Solid Carbide Drills

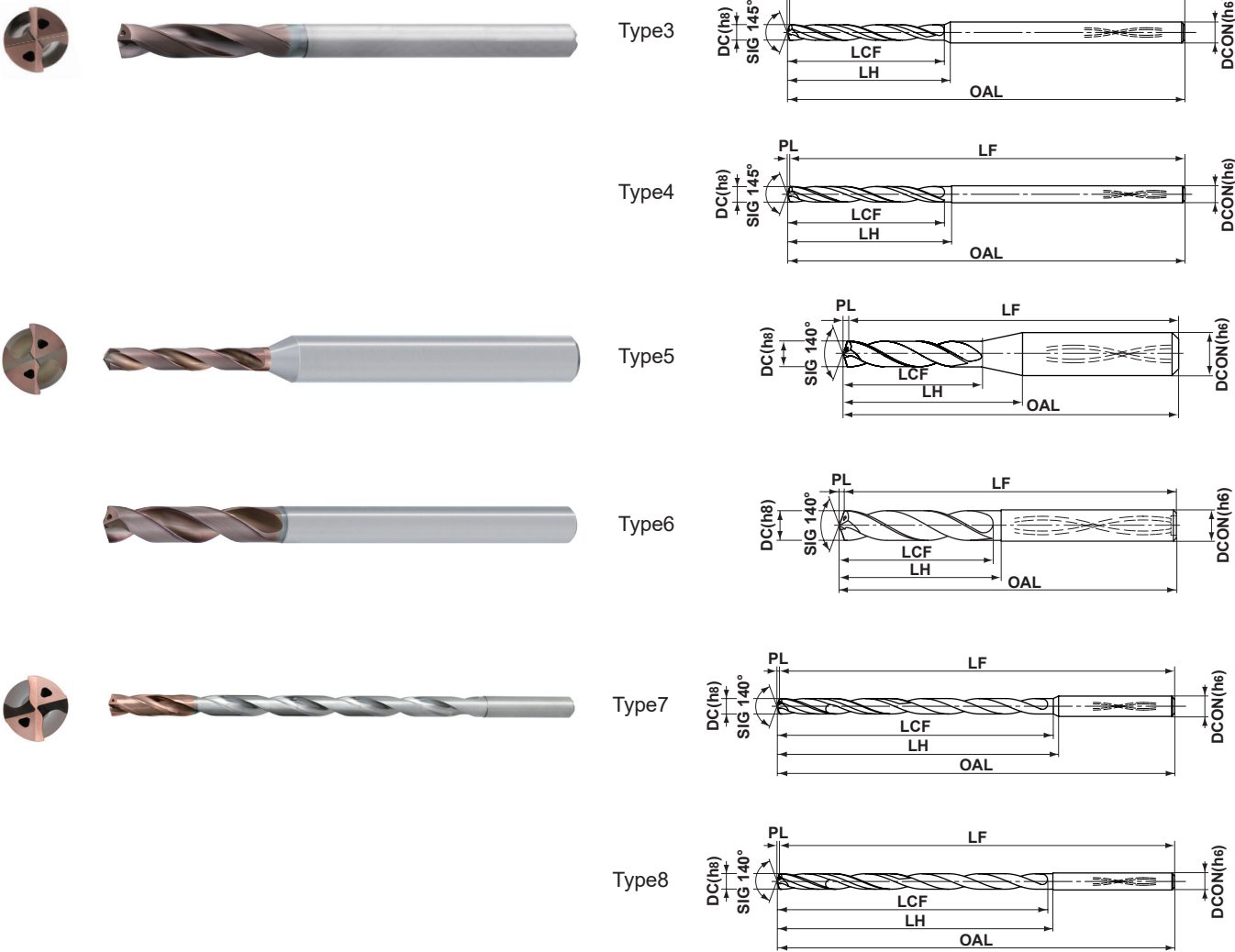
MVE/MVS



MVE



MVS



(inch)						
Type	Tolerance	DC=.1181	.1181<DC≤.2362	.2362<DC≤.3937	.3937<DC≤.7087	.7087<DC≤.7874
Type1,2,3,4,5,6	DC	$-\begin{smallmatrix} 0 \\ .00055 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ .00071 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ .00087 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ .00106 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ .00130 \end{smallmatrix}$
Type7,8	DC	$-\begin{smallmatrix} .00067 \\ .00122 \end{smallmatrix}$	$-\begin{smallmatrix} .00098 \\ .00169 \end{smallmatrix}$	$-\begin{smallmatrix} .00130 \\ .00217 \end{smallmatrix}$	$-\begin{smallmatrix} .00161 \\ .00268 \end{smallmatrix}$	—
DCON		$-\begin{smallmatrix} 0 \\ .00024 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ .00031 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ .00035 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ .00043 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ .00051 \end{smallmatrix}$

(mm)						
Type	Tolerance	DC=3	3<DC≤6	6<DC≤10	10<DC≤18	18 <DC≤20
Type1,2,3,4,5,6	DC	$-\begin{smallmatrix} 0 \\ -0.014 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ -0.018 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ -0.022 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ -0.027 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ -0.033 \end{smallmatrix}$
Type7,8	DC	$-\begin{smallmatrix} -0.017 \\ -0.031 \end{smallmatrix}$	$-\begin{smallmatrix} -0.025 \\ -0.043 \end{smallmatrix}$	$-\begin{smallmatrix} -0.033 \\ -0.055 \end{smallmatrix}$	$-\begin{smallmatrix} -0.041 \\ -0.068 \end{smallmatrix}$	—
DCON		$-\begin{smallmatrix} 0 \\ -0.006 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ -0.008 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ -0.009 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ -0.011 \end{smallmatrix}$	$-\begin{smallmatrix} 0 \\ -0.013 \end{smallmatrix}$

DC					l/d	Coolant (Int./Ext.)	Order Number	Stock	LCF		LH		OAL		LF		PL		DCON		Type	
Metric (mm)	Decimal	Fraction	Wire / Letter	Thread Size				DP1020														
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		
3.0	.1181				2	Ext.	MVE0300X02S030	★	16.5	.650	16.5	.650	55.5	2.185	55	2.165	0.5	.020	3	.118	2	
					2	Ext.	MVE0300X02S060	●	16.5	.650	19.7	.776	55.5	2.185	55	2.165	0.5	.020	6	.236	1	
					2	Int.	MVS0300X02S030PL	★	16.5	.650	16.5	.650	55.5	2.185	55	2.165	0.5	.020	3	.118	4	
					2	Int.	MVS0300X02S060PL	●	16.5	.650	19.7	.776	55.5	2.185	55	2.165	0.5	.020	6	.236	3	
					3	Ext.	MVE0300X03S030	★	21.5	.846	21.5	.846	60.5	2.382	60	2.362	0.5	.020	3	.118	2	
					3	Ext.	MVE0300X03S060	★	21.5	.846	24.7	.972	60.5	2.382	60	2.362	0.5	.020	6	.236	1	
					3	Int.	MVS0300X03S030	★	21.5	.846	21.5	.846	72.5	2.854	72	2.835	0.5	.020	3	.118	6	
					3	Int.	MVS0300X03S060	●	21.5	.846	24.7	.972	72.5	2.854	72	2.835	0.5	.020	6	.236	5	
					5	Int.	MVS0300X05S030	★	28.5	1.122	28.5	1.122	81.5	3.209	81	3.189	0.5	.020	3	.118	6	
					5	Int.	MVS0300X05S060	●	28.5	1.122	31.7	1.248	81.5	3.209	81	3.189	0.5	.020	6	.236	5	
					8	Int.	MVS0300X08S030	★	35.5	1.398	35.5	1.398	81.5	3.209	81	3.189	0.5	.020	3	.118	6	
					8	Int.	MVS0300X08S060	●	35.5	1.398	38.7	1.524	81.5	3.209	81	3.189	0.5	.020	6	.236	5	
					10	Int.	MVS0300X10S030	★	39.5	1.555	42.5	1.677	90.5	3.563	90	3.543	0.5	.020	3	.118	8	
					10	Int.	MVS0300X10S060	●	39.5	1.555	45.8	1.803	90.5	3.563	90	3.543	0.5	.020	6	.236	7	
					15	Int.	MVS0300X15S030	★	54.5	2.146	57.5	2.268	105.5	4.154	105	4.134	0.5	.020	3	.118	8	
					15	Int.	MVS0300X15S060	●	54.5	2.146	60.8	2.394	105.5	4.154	105	4.134	0.5	.020	6	.236	7	
					20	Int.	MVS0300X20S030	★	69.5	2.736	72.5	2.858	120.5	4.744	120	4.724	0.5	.020	3	.118	8	
					20	Int.	MVS0300X20S060	●	69.5	2.736	75.8	2.984	120.5	4.744	120	4.724	0.5	.020	6	.236	7	
					25	Int.	MVS0300X25S030	★	84.5	3.327	87.5	3.449	135.5	5.335	135	5.315	0.5	.020	3	.118	8	
					25	Int.	MVS0300X25S060	●	84.5	3.327	90.8	3.575	135.5	5.335	135	5.315	0.5	.020	6	.236	7	
					30	Int.	MVS0300X30S030	★	99.5	3.917	102.5	4.039	150.5	5.925	150	5.906	0.5	.020	3	.118	8	
					30	Int.	MVS0300X30S060	●	99.5	3.917	105.8	4.165	150.5	5.925	150	5.906	0.5	.020	6	.236	7	
					35	Int.	MVS0300X35S030	★	115.5	4.547	118.5	4.669	166.5	6.555	166	6.535	0.5	.020	3	.118	8	
					35	Int.	MVS0300X35S060	●	115.5	4.547	121.8	4.795	166.5	6.555	166	6.535	0.5	.020	6	.236	7	
					40	Int.	MVS0300X40S030	★	130.5	5.138	133.5	5.260	181.5	7.146	181	7.126	0.5	.020	3	.118	8	
					40	Int.	MVS0300X40S060	●	130.5	5.138	136.8	5.386	181.5	7.146	181	7.126	0.5	.020	6	.236	7	
3.048	.1200		31		2	Ext.	MVE0305X02S060	●	18.6	.732	21.8	.858	55.6	2.189	55	2.165	0.6	.024	6	.236	1	
						2	Int.	MVS0305X02S060PL	●	18.5	.728	21.6	.854	55.5	2.185	55	2.165	0.5	.020	6	.236	3
						3	Int.	MVS0305X03S060	●	21.6	.850	24.8	.976	76.6	3.016	76	2.992	0.6	.024	6	.236	5
						5	Int.	MVS0305X05S060	●	32.6	1.283	35.8	1.409	87.6	3.449	87	3.425	0.6	.024	6	.236	5
						8	Int.	MVS0305X08S060	●	41.6	1.638	44.8	1.764	87.6	3.449	87	3.425	0.6	.024	6	.236	5
						10	Int.	MVS0305X10S060	●	46.6	1.835	52.7	2.079	97.6	3.843	97	3.819	0.6	.024	6	.236	7
						15	Int.	MVS0305X15S060	●	63.6	2.504	69.7	2.748	114.6	4.512	114	4.488	0.6	.024	6	.236	7
						20	Int.	MVS0305X20S060	●	81.6	3.213	87.7	3.457	132.6	5.220	132	5.197	0.6	.024	6	.236	7
						25	Int.	MVS0305X25S060	●	98.6	3.882	104.7	4.126	149.6	5.890	149	5.866	0.6	.024	6	.236	7
						30	Int.	MVS0305X30S060	●	116.6	4.591	119.6	4.835	167.6	6.598	167	6.575	0.6	.024	6	.236	7
						35	Int.	MVS0305X35S060	●	134.6	5.299	137.6	5.543	185.6	7.307	185	7.283	0.6	.024	6	.236	7
						40	Int.	MVS0305X40S060	●	150.6	5.929	153.6	6.173	201.6	7.937	201	7.913	0.6	.024	6	.236	7

(Note 1) Please contact Mitsubishi Materials for any geometry that is not in the catalog (e.g. different dia. and length).

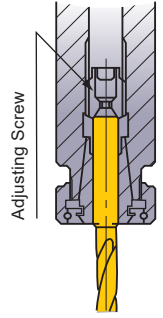
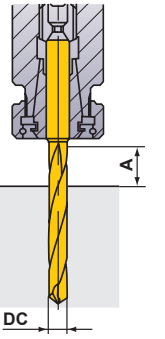
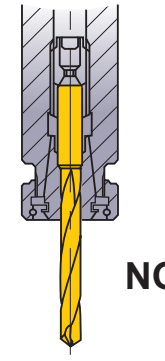
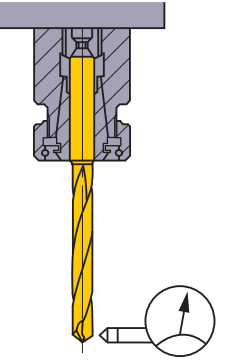
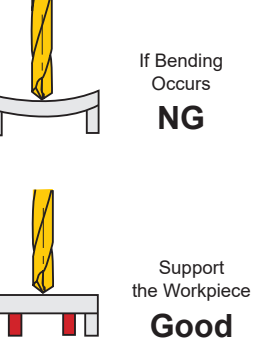
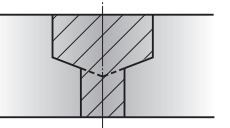
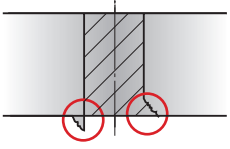
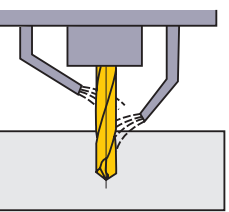
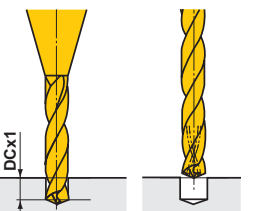
(Note 2) The coolant hole of ø5.9mm or less will be round shape.

● : USA Stock ★ : Stocked in Japan

Solid Carbide Drills

MVE/MVS

■ Operational Guidance

Drill Holding  Thrust bearing type collet chuck holds the drill securely.	Drill Length  $A > DC \times 1.5$ (DC > .079" for DC < .118")	Drill Installation  Do not clamp on the flutes.	Installation Tolerance  Run-out $\leq .0012$ inch
Thin Workpiece  If Bending Occurs NG Support the Workpiece Good	Interrupted Cutting One Process Good ① Lower the feed when drilling the interrupted part. Requires Prior Machining ① Spot face with an end mill prior to drilling.	Stepped Holes  ① Divide the two processes. ② Drill the larger hole first. *A tool for machining both chamfer and spot face can be produced to order.	Burring and Workpiece Chipping  ① Lower the feed rate by 50% at the end of through cutting. ② Add a 45° chamfer. ③ Change the point angle.
Coolant Method (MVE)  Two coolant positions, at the end and at the center are ideal.	Through Coolant Type (MVS) Spindles Through Coolant Type Revolving Coolant Machine Type Less than $\phi .118$ inch : 225PSI-1000PSI More than $\phi .118$ inch : 75PSI-1000PSI More than 450PSI is recommended.	Coolant Handling <MVS Type> ① Small chip particles can jam in the oil hole of small diameter drills. Always use a fine mesh filter as a preventative measure. ② Dirt and dust particles adhere to the oil in old coolant and prevent an efficient flow. Regular coolant exchange is recommended.	Drill Installation  ① Drill a prepared hole about DCx1 using the shortest flute length of MVS. (DC=drill diameter) ② Use the prepared hole as a guide when using a drill with an oil hole. Depending on the cutting conditions, peck feed is recommended.

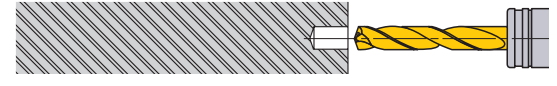
■ Notes on Use (For DC<.118")

Please use a fine mesh filter (5 microns or less) for coolant to prevent chips from jamming in the coolant hole.
For deep drilling with the long type drill, machining a pilot hole is recommended.
(Otherwise, centrifugal forces may cause drill breakage.)

■ Operational Guidance for the MVS of Long Type Drill (L/D $\geq$ 10)

Flat Face Drilling ●Drilling a blind hole

1. Drilling a Pilot Hole



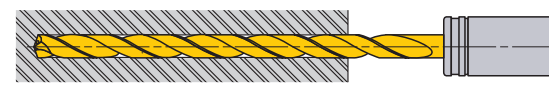
① Use a drill with the same or larger point angle than the long type. Use the shortest flute possible.
② Ensure a high precision hole is drilled for the guide.
③ Drill depth : Approx DCx1.
(Adjust the pilot hole depth according to the length of the long type drill.)

2. Initial Cutting with the Long Type Drill



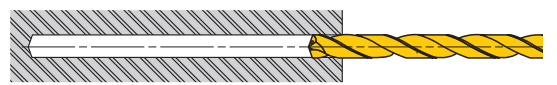
① Penetrate the guide hole at low revolution. (Revolution 500-1000 min⁻¹, feed rate .008—.012 IPR)
② Stop the long type drill .020—.039 inch short of the guide hole bottom.

3. Drill the Deep Hole



① Start cutting at the recommended speed and feed with a non-peck (continuous feed) cycle.

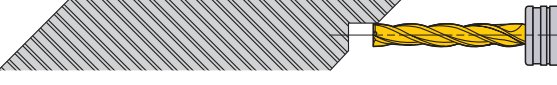
4. Drill Retraction



① After drilling, lower the cutting revolution about .020—.039 inch short of the hole end. (Revolution 500-1000 min⁻¹)
② Retract the drill to the pilot hole depth starting point at a feed rate of 120 IPM.
③ Finally, clear the hole at a cutting speed of 65—100 SFM and feed rate of .008—.012 IPR.

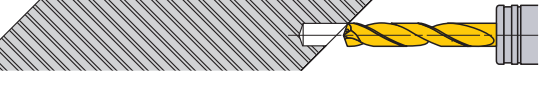
Interrupted Drilling ●Drilling and breaking through on irregular faces or angles

1. Spot Facing



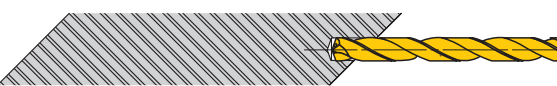
① Machine a flat on the irregular face by using an end mill or slot drill capable of spot facing. Make the spot face diameter the same size as the required deep hole diameter.

2. Drilling a Pilot Hole



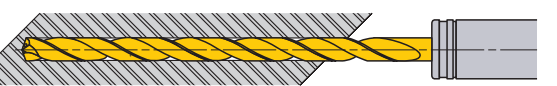
① Use a drill with the same or larger point angle than the long type. Use the shortest flute possible.
② Ensure a high precision hole is drilled for the guide.
③ Drill depth : Approx DCx1.
(Adjust the pilot hole depth according to the length of the long type drill.)

3. Initial Cutting with the Long Type Drill



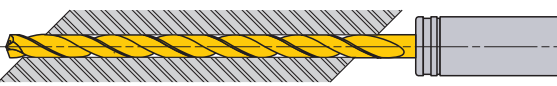
① Penetrate the guide hole at a low revolution. (Revolution 500-1000 min⁻¹, feed rate .008—.012 IPR)
② Stop the long type drill .020—.039 inch short of the guide hole bottom.

4. Drill the Deep Hole



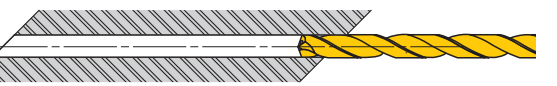
① Start cutting at the recommended speed and feed with a non-peck (continuous feed) cycle.
② Feed as usual until breaking through.

5. Breaking Through



① When breaking through, the cutting edge can be damaged.
② Recommend about half rate of the usual feed rate after breaking through.

6. Drill Retraction



① Finally clear the hole at a revolution speed 500-1000 min⁻¹ and feed rate of .008—.012 IPR.
② Retract the drill to the pilot hole depth starting point at a feed rate of 120 IPM.

Solid Carbide Drills

MVE/MVS

Recommended Cutting Conditions

MVE

(inch)

Work Material		Mild Steel (≤180HB)		Carbon Steel, Alloy Steel (180—280HB)	
		AISI 1010 etc.		AISI 1045, 4140 etc.	
DC		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
inch	mm				
.1260	3.2	215 (165—245)	.0039 (.0024—.0051)	195 (150—230)	.0039 (.0024—.0051)
.1575	4.0	230 (180—260)	.0047 (.0031—.0063)	215 (165—245)	.0047 (.0031—.0063)
.1969	5.0	230 (180—260)	.0059 (.0039—.0079)	215 (165—245)	.0059 (.0039—.0079)
.2480	6.3	265 (195—295)	.0079 (.0051—.0102)	245 (195—280)	.0079 (.0051—.0102)
.3150	8.0	280 (215—330)	.0091 (.0071—.0110)	265 (195—295)	.0091 (.0071—.0110)
.3937	10.0	295 (230—345)	.0106 (.0087—.0126)	280 (215—330)	.0106 (.0087—.0126)
.4724	12.0	310 (245—360)	.0122 (.0110—.0134)	295 (230—345)	.0122 (.0110—.0134)
.6299	16.0	330 (260—375)	.0130 (.0110—.0150)	295 (230—345)	.0130 (.0110—.0150)
.7874	20.0	330 (260—375)	.0118 (.0118—.0157)	295 (230—345)	.0118 (.0118—.0157)

Work Material		Carbon Steel, Alloy Steel (280—350HB)		Austenitic Stainless Steel (≤200HB)	
		AISI 4340 etc.		AISI 304, 316 etc.	
DC		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
inch	mm				
.1260	3.2	180 (130—215)	.0035 (.0024—.0047)	65 (50—80)	.0028 (.0020—.0031)
.1575	4.0	195 (150—230)	.0043 (.0028—.0055)	65 (50—80)	.0031 (.0024—.0039)
.1969	5.0	195 (150—230)	.0055 (.0035—.0071)	65 (50—80)	.0039 (.0028—.0051)
.2480	6.3	230 (180—260)	.0071 (.0043—.0094)	80 (65—100)	.0051 (.0035—.0067)
.3150	8.0	245 (195—280)	.0083 (.0063—.0098)	80 (65—100)	.0055 (.0039—.0071)
.3937	10.0	265 (195—295)	.0091 (.0075—.0106)	80 (65—100)	.0063 (.0047—.0075)
.4724	12.0	280 (215—330)	.0102 (.0091—.0114)	80 (65—100)	.0071 (.0059—.0079)
.6299	16.0	280 (215—330)	.0114 (.0094—.0130)	80 (65—100)	.0075 (.0059—.0091)
.7874	20.0	280 (215—330)	.0118 (.0102—.0134)	80 (65—100)	.0079 (.0059—.0094)

Work Material		Gray Cast Iron (≤350MPa)		Ductile Cast Iron (≤450MPa)	
		AISI No.45B etc.		AISI 60-40-18 etc.	
DC		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
inch	mm				
.1260	3.2	230 (180—260)	.0039 (.0024—.0051)	215 (165—245)	.0039 (.0024—.0051)
.1575	4.0	230 (180—260)	.0047 (.0031—.0063)	215 (165—245)	.0047 (.0031—.0063)
.1969	5.0	230 (180—260)	.0059 (.0039—.0079)	215 (165—245)	.0059 (.0039—.0079)
.2480	6.3	245 (195—280)	.0079 (.0051—.0102)	230 (180—260)	.0079 (.0051—.0102)
.3150	8.0	245 (195—280)	.0098 (.0071—.0122)	230 (180—260)	.0091 (.0071—.0110)
.3937	10.0	245 (195—280)	.0114 (.0087—.0138)	230 (180—260)	.0106 (.0087—.0126)
.4724	12.0	265 (195—295)	.0130 (.0110—.0146)	245 (195—280)	.0122 (.0110—.0134)
.6299	16.0	265 (195—295)	.0138 (.0110—.0165)	245 (195—280)	.0130 (.0110—.0150)
.7874	20.0	280 (215—330)	.0146 (.0118—.0173)	265 (195—295)	.0138 (.0118—.0157)

(Note) For the spindle revolution of diameters not shown in the table, please adjust to the conditions of larger and closest diameter, or calculate from the cutting speed of the closest diameter. For the feed rate per revolution, please set up within the recommended feed rate of the closest diameter appropriately.

(inch)

Work Material		Aluminum Alloy (Si<5%)		Heat Resistant Alloy	
		ASTM A6061, 7075 etc.		Inconel718 etc.	
DC		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
inch	mm				
.1260	3.2	265 (195—295)	.0039 (.0024—.0051)	65 (50—80)	.0028 (.0020—.0035)
.1575	4.0	265 (195—295)	.0047 (.0031—.0063)	65 (50—80)	.0035 (.0024—.0043)
.1969	5.0	265 (195—295)	.0059 (.0039—.0079)	65 (50—80)	.0043 (.0031—.0055)
.2480	6.3	295 (230—360)	.0079 (.0051—.0102)	80 (65—100)	.0055 (.0035—.0075)
.3150	8.0	295 (230—360)	.0091 (.0071—.0110)	80 (65—100)	.0055 (.0043—.0067)
.3937	10.0	295 (230—360)	.0106 (.0087—.0126)	80 (65—100)	.0063 (.0047—.0075)
.4724	12.0	330 (260—395)	.0122 (.0110—.0134)	80 (65—100)	.0063 (.0051—.0071)
.6299	16.0	330 (260—395)	.0130 (.0110—.0150)	80 (65—100)	.0071 (.0055—.0083)
.7874	20.0	360 (280—425)	.0138 (.0118—.0157)	100 (65—115)	.0075 (.0059—.0087)

Work Material		Hardened Steel (40—55HRC)	
		AISI H13, L6 etc.	
DC		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
inch	mm		
.1260	3.2	65 (50—80)	.0028 (.0020—.0035)
.1575	4.0	65 (50—80)	.0035 (.0024—.0043)
.1969	5.0	65 (50—80)	.0043 (.0031—.0055)
.2480	6.3	80 (65—100)	.0055 (.0035—.0075)
.3150	8.0	80 (65—100)	.0055 (.0043—.0067)
.3937	10.0	80 (65—100)	.0063 (.0047—.0075)
.4724	12.0	80 (65—100)	.0063 (.0051—.0071)
.6299	16.0	80 (65—100)	.0071 (.0055—.0083)
.7874	20.0	100 (65—115)	.0075 (.0059—.0087)

(Note) For the spindle revolution of diameters not shown in the table, please adjust to the conditions of larger and closest diameter, or calculate from the cutting speed of the closest diameter. For the feed rate per revolution, please set up within the recommended feed rate of the closest diameter appropriately.

Solid Carbide Drills

MVE/MVS

Recommended Cutting Conditions

MVS							(inch)
Work Material			Mild Steel (≤180HB)		Carbon Steel, Alloy Steel (180—280HB)		
			AISI 1010 etc.		AISI 1045, 4140 etc.		
DC		L/D	vc	fr	vc	fr	
inch	mm		(Min.—Max.) (SFM)	(Min.—Max.) (IPR)	(Min.—Max.) (SFM)	(Min.—Max.) (IPR)	
.0394	1.0	2,7DC	165 (130—195)	.0016 (.0008—.0020)	165 (130—195)	.0016 (.0008—.0020)	
		≥12DC	165 (130—195)	.0008 (.0004—.0012)	130 (100—150)	.0008 (.0004—.0012)	
.0591	1.5	2,7DC	165 (130—195)	.0020 (.0012—.0031)	165 (130—195)	.0020 (.0012—.0031)	
		≥12DC	165 (130—195)	.0020 (.0008—.0031)	130 (100—150)	.0020 (.0012—.0031)	
.0787	2.0	2,7DC	165 (130—195)	.0028 (.0016—.0039)	165 (130—195)	.0028 (.0016—.0039)	
		≥12DC	165 (130—195)	.0028 (.0016—.0039)	165 (130—195)	.0028 (.0016—.0039)	
.0984	2.5	2,7DC	195 (150—230)	.0035 (.0020—.0051)	195 (150—230)	.0035 (.0020—.0051)	
		≥12DC	195 (150—230)	.0035 (.0024—.0051)	165 (130—195)	.0031 (.0020—.0051)	
.1260	3.2	2DC	295 (130—360)	.0067 (.0039—.0094)	295 (165—330)	.0067 (.0039—.0094)	
		3,5,8DC	295 (230—345)	.0039 (.0024—.0051)	265 (195—295)	.0039 (.0024—.0051)	
		10,15,20,25,30DC	295 (130—360)	.0067 (.0039—.0094)	295 (165—330)	.0067 (.0039—.0094)	
		35,40DC	245 (130—310)	.0055 (.0031—.0075)	245 (130—280)	.0055 (.0031—.0075)	
.1575	4.0	2DC	330 (165—395)	.0079 (.0047—.0118)	295 (165—330)	.0079 (.0047—.0118)	
		3,5,8DC	330 (260—375)	.0047 (.0031—.0063)	295 (230—345)	.0047 (.0031—.0063)	
		10,15,20,25,30DC	295 (130—360)	.0079 (.0047—.0118)	295 (165—330)	.0079 (.0047—.0118)	
		35,40DC	245 (130—310)	.0063 (.0039—.0094)	245 (130—280)	.0063 (.0039—.0094)	
.1969	5.0	2DC	330 (165—395)	.0098 (.0059—.0138)	295 (165—330)	.0098 (.0059—.0138)	
		3,5,8DC	330 (260—375)	.0059 (.0039—.0079)	295 (230—345)	.0059 (.0039—.0079)	
		10,15,20,25,30DC	295 (130—360)	.0098 (.0059—.0138)	295 (165—330)	.0098 (.0059—.0138)	
		35,40DC	245 (130—310)	.0079 (.0047—.0110)	245 (130—280)	.0079 (.0047—.0110)	
.2480	6.3	2DC	360 (195—425)	.0106 (.0067—.0146)	330 (195—360)	.0106 (.0067—.0146)	
		3,5,8DC	360 (280—410)	.0079 (.0051—.0102)	330 (260—375)	.0079 (.0051—.0102)	
		10,15,20,25,30DC	360 (195—425)	.0106 (.0067—.0146)	330 (195—360)	.0106 (.0067—.0146)	
		35,40DC	295 (130—360)	.0087 (.0055—.0118)	260 (130—295)	.0087 (.0055—.0118)	
.3150	8.0	2DC	395 (230—460)	.0118 (.0079—.0157)	360 (230—395)	.0118 (.0079—.0157)	
		3,5,8DC	395 (310—445)	.0091 (.0071—.0110)	360 (280—410)	.0091 (.0071—.0110)	
		10,15,20,25,30DC	360 (195—425)	.0118 (.0079—.0157)	330 (195—360)	.0118 (.0079—.0157)	
		35,40DC	295 (130—360)	.0094 (.0063—.0126)	260 (130—295)	.0094 (.0063—.0126)	
.3937	1.0	2DC	425 (260—490)	.0126 (.0087—.0165)	395 (260—425)	.0126 (.0087—.0165)	
		3,5,8DC	425 (330—490)	.0106 (.0087—.0126)	395 (310—445)	.0106 (.0087—.0126)	
		10,15,20,25,30DC	360 (195—425)	.0126 (.0087—.0165)	330 (195—360)	.0126 (.0087—.0165)	
		35,40DC	295 (130—360)	.0102 (.0071—.0134)	260 (130—295)	.0102 (.0071—.0134)	
.4724	12.0	2DC	460 (295—525)	.0134 (.0094—.0173)	425 (295—460)	.0134 (.0094—.0173)	
		3,5,8DC	460 (360—525)	.0118 (.0102—.0134)	425 (330—490)	.0118 (.0102—.0134)	
		10,15,20,25,30DC	425 (260—490)	.0134 (.0094—.0173)	395 (260—425)	.0134 (.0094—.0173)	
		35,40DC	345 (180—410)	.0106 (.0075—.0138)	310 (180—345)	.0106 (.0075—.0138)	
.6299	16.0	2DC	525 (360—590)	.0142 (.0102—.0181)	460 (330—490)	.0142 (.0102—.0181)	
		3,5,8DC	525 (410—590)	.0130 (.0106—.0150)	460 (360—525)	.0130 (.0106—.0150)	
		10,15,20,25,30DC	425 (260—490)	.0142 (.0102—.0181)	395 (260—425)	.0142 (.0102—.0181)	
		35,40DC	345 (180—410)	.0114 (.0083—.0146)	310 (180—345)	.0114 (.0083—.0146)	
.7874	2.0	3,5,8DC	525 (410—590)	.0138 (.0118—.0157)	460 (360—525)	.0138 (.0118—.0157)	

(Note) For the spindle revolution of diameters not shown in the table, please adjust to the conditions of larger and closest diameter, or calculate from the cutting speed of the closest diameter. For the feed rate per revolution, please set up within the recommended feed rate of the closest diameter appropriately.

							(inch)
Work Material			Carbon Steel, Alloy Steel (280—350HB)		Austenitic Stainless Steel (≤200HB)		
			AISI 4340 etc.		AISI 304, 316 etc.		
DC		L/D	vc	fr	vc	fr	
inch	mm		(Min.—Max.) (SFM)	(Min.—Max.) (IPR)	(Min.—Max.) (SFM)	(Min.—Max.) (IPR)	
.0394	1.0	2,7DC	130 (100—150)	.0016 (.0008—.0020)	100 (65—115)	.0012 (.0008—.0020)	
		≥12DC	100 (65—115)	.0008 (.0004—.0012)	100 (65—115)	.0008 (.0004—.0012)	
.0591	1.5	2,7DC	130 (100—150)	.0020 (.0012—.0031)	100 (65—115)	.0020 (.0012—.0028)	
		≥12DC	100 (65—115)	.0020 (.0008—.0031)	100 (65—115)	.0020 (.0008—.0031)	
.0787	2.0	2,7DC	130 (100—150)	.0028 (.0016—.0039)	100 (65—115)	.0024 (.0016—.0031)	
		≥12DC	165 (130—195)	.0028 (.0016—.0039)	100 (65—115)	.0028 (.0016—.0039)	
.0984	2.5	2,7DC	165 (130—195)	.0035 (.0020—.0051)	130 (100—150)	.0031 (.0020—.0039)	
		≥12DC	165 (130—195)	.0031 (.0020—.0051)	100 (65—115)	.0031 (.0020—.0047)	
.1260	3.2	2DC	295 (165—330)	.0059 (.0035—.0087)	130 (65—195)	.0028 (.0020—.0035)	
		3,5,8DC	230 (180—260)	.0039 (.0024—.0051)	130 (100—150)	.0031 (.0024—.0039)	
		10,15,20,25,30DC	260 (130—295)	.0059 (.0035—.0087)	130 (65—195)	.0028 (.0020—.0035)	
		35,40DC	210 (130—245)	.0059 (.0028—.0071)	100 (65—165)	.0024 (.0016—.0028)	
.1575	4.0	2DC	295 (165—330)	.0071 (.0043—.0106)	130 (65—195)	.0031 (.0024—.0039)	
		3,5,8DC	265 (195—295)	.0043 (.0028—.0055)	130 (100—150)	.0035 (.0024—.0043)	
		10,15,20,25,30DC	260 (130—295)	.0071 (.0043—.0106)	130 (65—195)	.0031 (.0024—.0039)	
		35,40DC	210 (130—245)	.0071 (.0035—.0087)	100 (65—165)	.0024 (.0020—.0031)	
.1969	5.0	2DC	295 (165—330)	.0087 (.0055—.0126)	130 (65—195)	.0039 (.0028—.0047)	
		3,5,8DC	265 (195—295)	.0055 (.0035—.0071)	130 (100—150)	.0043 (.0031—.0055)	
		10,15,20,25,30DC	260 (130—295)	.0087 (.0055—.0126)	130 (65—195)	.0039 (.0028—.0047)	
		35,40DC	210 (130—245)	.0087 (.0043—.0102)	100 (65—165)	.0031 (.0024—.0039)	
.2480	6.3	2DC	330 (195—360)	.0094 (.0059—.0130)	165 (100—230)	.0047 (.0031—.0063)	
		3,5,8DC	295 (230—345)	.0071 (.0043—.0094)	165 (130—195)	.0055 (.0035—.0071)	
		10,15,20,25,30DC	295 (165—330)	.0094 (.0059—.0130)	165 (100—230)	.0047 (.0031—.0063)	
		35,40DC	245 (130—280)	.0094 (.0047—.0102)	130 (65—195)	.0039 (.0024—.0051)	
.3150	8.0	2DC	330 (230—360)	.0106 (.0071—.0142)	165 (65—195)	.0055 (.0039—.0067)	
		3,5,8DC	330 (260—375)	.0083 (.0063—.0098)	165 (130—195)	.0059 (.0039—.0075)	
		10,15,20,25,30DC	295 (195—330)	.0106 (.0071—.0142)	165 (65—195)	.0055 (.0039—.0067)	
		35,40DC	245 (150—280)	.0106 (.0055—.0114)	130 (65—165)	.0043 (.0031—.0055)	
.3937	10.0	2DC	330 (195—395)	.0114 (.0079—.0150)	165 (65—195)	.0059 (.0047—.0071)	
		3,5,8DC	360 (280—410)	.0091 (.0075—.0106)	165 (130—195)	.0063 (.0047—.0079)	
		10,15,20,25,30DC	295 (195—360)	.0114 (.0079—.0150)	165 (65—195)	.0059 (.0047—.0071)	
		35,40DC	245 (150—310)	.0114 (.0063—.0118)	130 (65—165)	.0047 (.0039—.0055)	
.4724	12.0	2DC	395 (295—460)	.0118 (.0087—.0157)	195 (65—230)	.0067 (.0055—.0075)	
		3,5,8DC	395 (310—445)	.0102 (.0087—.0114)	195 (150—230)	.0071 (.0059—.0083)	
		10,15,20,25,30DC	330 (195—395)	.0118 (.0087—.0157)	195 (65—230)	.0067 (.0055—.0075)	
		35,40DC	260 (130—330)	.0118 (.0071—.0126)	165 (65—195)	.0055 (.0043—.0059)	
.6299	16.0	2DC	395 (260—460)	.0126 (.0091—.0161)	195 (65—230)	.0067 (.0055—.0075)	
		3,5,8DC	425 (330—490)	.0110 (.0091—.0130)	195 (150—230)	.0075 (.0055—.0094)	
		10,15,20,25,30DC	330 (195—395)	.0126 (.0091—.0161)	195 (65—230)	.0067 (.0055—.0075)	
		35,40DC	260 (130—330)	.0126 (.0071—.0130)	165 (65—195)	.0055 (.0043—.0059)	
.7874	20.0	3,5,8DC	425 (330—490)	.0118 (.0102—.0134)	195 (150—230)	.0083 (.0059—.0102)	

(Note) For the spindle revolution of diameters not shown in the table, please adjust to the conditions of larger and closest diameter, or calculate from the cutting speed of the closest diameter. For the feed rate per revolution, please set up within the recommended feed rate of the closest diameter appropriately.

Solid Carbide Drills

MVE/MVS

Recommended Cutting Conditions

MVS

(inch)

Work Material			Gray Cast Iron (≦350MPa)		Ductile Cast Iron (≦450MPa)	
			No45B etc.		60-60-8 etc.	
			vc	fr	vc	fr
DC		L/D	(Min.—Max.)	(Min.—Max.)	(Min.—Max.)	(Min.—Max.)
inch	mm		(SFM)	(IPR)	(SFM)	(IPR)
.0394	1.0	2,7DC	165 (130—195)	.0016 (.0008—.0020)	130 (100—150)	.0016 (.0008—.0020)
		≥12DC	130 (100—150)	.0008 (.0004—.0012)	100 (65—115)	.0008 (.0004—.0012)
.0591	1.5	2,7DC	165 (130—195)	.0020 (.0012—.0031)	130 (100—150)	.0020 (.0012—.0031)
		≥12DC	130 (100—150)	.0020 (.0008—.0031)	100 (65—115)	.0020 (.0008—.0031)
.0787	2.0	2,7DC	165 (130—195)	.0028 (.0016—.0039)	130 (100—150)	.0028 (.0016—.0039)
		≥12DC	165 (130—195)	.0028 (.0016—.0039)	165 (130—195)	.0028 (.0016—.0039)
.0984	2.5	2,7DC	195 (150—230)	.0035 (.0020—.0051)	165 (130—195)	.0035 (.0020—.0051)
		≥12DC	165 (130—195)	.0035 (.0024—.0051)	165 (130—195)	.0031 (.0020—.0047)
.1260	3.2	2DC	295 (195—360)	.0075 (.0043—.0102)	295 (195—360)	.0067 (.0039—.0094)
		3,5,8DC	295 (230—345)	.0039 (.0024—.0051)	215 (165—245)	.0039 (.0024—.0051)
		10,15,20,25,30DC	295 (195—360)	.0075 (.0043—.0102)	295 (195—360)	.0067 (.0039—.0094)
		35,40DC	245 (150—310)	.0059 (.0035—.0083)	100 (65—165)	.0055 (.0031—.0075)
.1575	4.0	2DC	330 (230—395)	.0087 (.0051—.0130)	295 (195—360)	.0079 (.0047—.0118)
		3,5,8DC	330 (260—375)	.0047 (.0031—.0063)	215 (165—245)	.0047 (.0031—.0063)
		10,15,20,25,30DC	295 (195—360)	.0087 (.0051—.0130)	295 (195—360)	.0079 (.0047—.0118)
		35,40DC	245 (150—310)	.0071 (.0039—.0102)	100 (65—165)	.0063 (.0039—.0094)
.1969	5.0	2DC	330 (230—395)	.0110 (.0028—.0154)	295 (195—360)	.0098 (.0059—.0138)
		3,5,8DC	330 (260—375)	.0059 (.0039—.0079)	215 (165—245)	.0059 (.0039—.0079)
		10,15,20,25,30DC	295 (195—360)	.0110 (.0028—.0154)	295 (195—360)	.0098 (.0059—.0138)
		35,40DC	245 (150—310)	.0087 (.0024—.0122)	100 (65—165)	.0079 (.0047—.0110)
.2480	6.3	2DC	360 (260—425)	.0118 (.0075—.0161)	330 (230—395)	.0106 (.0067—.0146)
		3,5,8DC	360 (280—410)	.0079 (.0051—.0102)	230 (180—260)	.0079 (.0051—.0102)
		10,15,20,25,30DC	360 (260—425)	.0118 (.0075—.0161)	330 (230—395)	.0106 (.0067—.0146)
		35,40DC	295 (195—360)	.0094 (.0059—.0130)	130 (100—195)	.0087 (.0055—.0118)
.3150	8.0	2DC	395 (295—460)	.0130 (.0087—.0173)	330 (230—395)	.0118 (.0079—.0157)
		3,5,8DC	395 (310—445)	.0098 (.0071—.0122)	230 (180—260)	.0091 (.0071—.0110)
		10,15,20,25,30DC	360 (260—395)	.0130 (.0087—.0173)	330 (230—395)	.0118 (.0079—.0157)
		35,40DC	295 (195—330)	.0102 (.0071—.0138)	130 (100—195)	.0094 (.0063—.0126)
.3937	10.0	2DC	425 (330—460)	.0138 (.0094—.0181)	330 (230—395)	.0126 (.0087—.0165)
		3,5,8DC	425 (330—490)	.0114 (.0087—.0138)	230 (180—260)	.0106 (.0087—.0126)
		10,15,20,25,30DC	360 (260—395)	.0138 (.0094—.0181)	330 (230—395)	.0126 (.0087—.0165)
		35,40DC	295 (195—330)	.0110 (.0075—.0146)	130 (100—195)	.0102 (.0071—.0134)
.4724	12.0	2DC	460 (330—490)	.0146 (.0102—.0189)	395 (295—460)	.0134 (.0094—.0173)
		3,5,8DC	460 (360—525)	.0126 (.0102—.0146)	295 (230—345)	.0118 (.0102—.0134)
		10,15,20,25,30DC	425 (295—460)	.0146 (.0102—.0189)	395 (295—460)	.0134 (.0094—.0173)
		35,40DC	345 (210—375)	.0118 (.0083—.0150)	165 (130—230)	.0106 (.0075—.0138)
.6299	16.0	2DC	525 (395—560)	.0157 (.0114—.0189)	395 (295—460)	.0142 (.0102—.0181)
		3,5,8DC	525 (410—590)	.0138 (.0110—.0165)	295 (230—345)	.0130 (.0110—.0150)
		10,15,20,25,30DC	425 (295—460)	.0157 (.0114—.0189)	395 (295—460)	.0142 (.0102—.0181)
		35,40DC	345 (210—375)	.0126 (.0091—.0150)	165 (130—230)	.0114 (.0083—.0146)
.7874	20.0	3,5,8DC	525 (410—590)	.0146 (.0118—.0173)	330 (260—375)	.0138 (.0118—.0157)

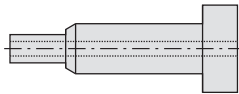
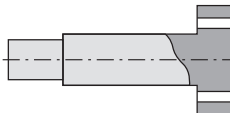
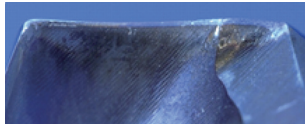
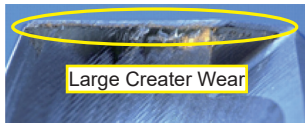
(Note) For the spindle revolution of diameters not shown in the table, please adjust to the conditions of larger and closest diameter, or calculate from the cutting speed of the closest diameter. For the feed rate per revolution, please set up within the recommended feed rate of the closest diameter appropriately.

(inch)

Work Material			Aluminum Alloy (Si<5%)		Heat Resistant Alloy	
			ASTM 6061, 7075 etc.		Inconel718 etc.	
			vc	fr	vc	fr
DC		L/D	(Min.—Max.)	(Min.—Max.)	(Min.—Max.)	(Min.—Max.)
inch	mm		(SFM)	(IPR)	(SFM)	(IPR)
.0394	1.0	2,7DC	195 (150—230)	.0020 (.0012—.0031)	35 (15—50)	.0008 (.0004—.0012)
		≥12DC	165 (130—195)	.0020 (.0012—.0031)	35 (15—50)	.0008 (.0004—.0012)
.0591	1.5	2,7DC	260 (195—295)	.0028 (.0020—.0047)	35 (15—50)	.0012 (.0008—.0016)
		≥12DC	230 (180—260)	.0031 (.0020—.0047)	35 (15—50)	.0012 (.0008—.0016)
.0787	2.0	2,7DC	295 (230—345)	.0039 (.0024—.0059)	50 (35—65)	.0016 (.0012—.0020)
		≥12DC	260 (195—295)	.0043 (.0024—.0059)	50 (35—65)	.0016 (.0012—.0020)
.0984	2.5	2,7DC	330 (260—375)	.0051 (.0031—.0079)	50 (35—65)	.0020 (.0016—.0024)
		≥12DC	295 (230—345)	.0055 (.0031—.0079)	50 (35—65)	.0020 (.0016—.0024)
.1260	3.2	2DC	395 (260—490)	.0091 (.0039—.0138)	65 (30—80)	.0028 (.0020—.0035)
		3,5,8DC	395 (310—460)	.0091 (.0039—.0138)	65 (50—80)	.0028 (.0020—.0035)
		10,15,20,25,30DC	330 (195—425)	.0091 (.0039—.0138)	65 (30—80)	.0028 (.0020—.0035)
		35,40DC	260 (130—360)	.0071 (.0031—.0110)	50 (30—65)	.0024 (.0016—.0028)
.1575	4.0	2DC	395 (260—490)	.0094 (.0047—.0138)	65 (30—80)	.0035 (.0024—.0043)
		3,5,8DC	395 (310—460)	.0094 (.0047—.0138)	65 (50—80)	.0035 (.0024—.0043)
		10,15,20,25,30DC	330 (195—425)	.0094 (.0047—.0138)	65 (30—80)	.0035 (.0024—.0043)
		35,40DC	260 (130—360)	.0075 (.0039—.0110)	50 (30—65)	.0028 (.0020—.0035)
.1969	5.0	2DC	395 (260—490)	.0098 (.0059—.0138)	65 (30—80)	.0043 (.0031—.0055)
		3,5,8DC	395 (310—460)	.0098 (.0059—.0138)	65 (50—80)	.0043 (.0031—.0055)
		10,15,20,25,30DC	330 (195—425)	.0098 (.0059—.0138)	65 (30—80)	.0043 (.0031—.0055)
		35,40DC	260 (130—360)	.0079 (.0047—.0110)	50 (30—65)	.0035 (.0024—.0043)
.2480	6.3	2DC	490 (360—590)	.0138 (.0079—.0197)	80 (50—100)	.0051 (.0035—.0063)
		3,5,8DC	490 (395—560)	.0138 (.0079—.0197)	80 (65—100)	.0051 (.0035—.0063)
		10,15,20,25,30DC	425 (295—525)	.0138 (.0079—.0197)	65 (30—80)	.0051 (.0035—.0063)
		35,40DC	345 (210—440)	.0110 (.0063—.0157)	50 (30—65)	.0039 (.0028—.0051)
.3150	8.0	2DC	490 (330—560)	.0138 (.0079—.0197)	80 (50—100)	.0055 (.0043—.0063)
		3,5,8DC	490 (395—560)	.0138 (.0079—.0197)	80 (65—100)	.0055 (.0043—.0067)
		10,15,20,25,30DC	425 (260—490)	.0138 (.0079—.0197)	65 (30—80)	.0055 (.0043—.0063)
		35,40DC	345 (180—410)	.0110 (.0063—.0157)	50 (30—65)	.0043 (.0035—.0051)
.3937	10.0	2DC	490 (330—560)	.0197 (.0079—.0315)	80 (50—100)	.0059 (.0047—.0067)
		3,5,8DC	490 (395—560)	.0197 (.0079—.0315)	80 (65—100)	.0059 (.0047—.0067)
		10,15,20,25,30DC	425 (260—490)	.0197 (.0079—.0315)	65 (30—80)	.0059 (.0047—.0067)
		35,40DC	345 (180—410)	.0157 (.0063—.0252)	50 (30—65)	.0047 (.0039—.0055)
.4724	12.0	2DC	525 (330—560)	.0197 (.0079—.0315)	80 (50—100)	.0063 (.0051—.0071)
		3,5,8DC	525 (410—590)	.0197 (.0079—.0315)	80 (65—100)	.0063 (.0051—.0071)
		10,15,20,25,30DC	460 (260—490)	.0197 (.0079—.0315)	65 (30—80)	.0063 (.0051—.0071)
		35,40DC	375 (180—410)	.0157 (.0063—.0252)	50 (30—65)	.0051 (.0039—.0055)
.6299	16.0	2DC	525 (330—560)	.0197 (.0079—.0315)	80 (50—100)	.0067 (.0055—.0075)
		3,5,8DC	525 (410—590)	.0236 (.0079—.0394)	80 (65—100)	.0071 (.0055—.0083)
		10,15,20,25,30DC	460 (260—490)	.0197 (.0079—.0315)	65 (30—80)	.0067 (.0055—.0075)
		35,40DC	375 (180—410)	.0157 (.0063—.0252)	50 (30—65)	.0055 (.0043—.0059)
.7874	20.0	3,5,8DC	560 (445—655)	.0236 (.0079—.0394)	100 (65—115)	.0075 (.0059—.0087)

(Note) For the spindle revolution of diameters not shown in the table, please adjust to the conditions of larger and closest diameter, or calculate from the cutting speed of the closest diameter. For the feed rate per revolution, please set up within the recommended feed rate of the closest diameter appropriately.

Application Example

Drill		MVS0300X03S030	MVS0620X03S070	MVE0370X02S040
Workpiece		AISI 1010 (Automobile Parts)	AISI 1045 (Machinery Parts)	AISI 304 (Ink-jet Head)
				
Cutting Conditions	Cutting Speed (SFM)	185	141	75
	Feed Rate (IPR)	.003	.004	.004
	Hole Depth (Inch)	.295	.346	.197
Cutting Mode		Water-insoluble	Water-insoluble	Water-insoluble
Result		Cutting Length 197 feet MVS  Conventional  MVS exhibits slight wear and can continue machining further.	Cutting Length 231 feet MVS  Conventional  MVS exhibits slight wear and can continue machining further.	Number of Holes 800 holes Cutting Length 131 feet MVE  Conventional  MVE shows a small amount of wear and a 20% rise of the number of machining.

Memo



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FOR YOUR SAFETY

- Don't handle inserts and chips without gloves.
- Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage.
- Please use safety covers and wear safety glasses.
- When using compounded cutting oils, please take fire precautions.
- When attaching inserts or spare parts, please use only the correct wrench or driver.
- When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

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Tools specifications subject to change without notice.

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